

REMARKS

Applicants respectfully request reconsideration and allowance of the pending claims.

I. Status of the Claims

Claims 1-69 are currently pending, while claims 70-93 have been canceled. Claims 6-8, 13-16, 37-39, and 44-47 are withdrawn from consideration.

Claims 24-26, 31, 32, 55-57, 62, and 63 have been amended. Claims 24 and 25 have been amended to incorporate the requirements of base claim 1. Claims 55 and 56 have been amended to incorporate the requirements of base claim 32. The remaining claim amendments were made to clarify the claims.

II. Amendments to the Specification

Applicants request correction of several obvious typographical errors in the specification. In particular, applicants request that all references to "contopus" be replaced with "centipoise." Since the use of the term "contopus" is an obvious typographical error, the requested amendments do not add new matter to the application.

III. Claim Support in Provisional Application

Pending claims 1-69 are supported by the claims of the priority document, Provisional Application 60/433,409, filed on December 13, 2002 as follows:

- Pending claims 1-10 are supported by claims 1-10, respectively of the provisional application.
- Pending claims 11 and 12 are supported by claims 13 and 14, respectively of the provisional application.

- Pending claims 13-16 are supported by claims 18-21, respectively of the provisional application.
- Pending claims 17 and 18 are supported by claims 24 and 25, respectively of the provisional application.
- Pending claims 19-22 are supported by claims 27-30, respectively of the provisional application.
- Pending claim 23 is supported by claim 33 of the provisional application.
- Pending claims 24-29 are supported by claims 35-40, respectively of the provisional application.
- Pending claim 30 is supported by claim 57 of the provisional application.
- Pending claim 31 is supported by claim 59 of the provisional application.
- Pending claims 32-41 are supported by claims 66-75, respectively of the provisional application.
- Pending claims 42 and 43 are supported by claims 78 and 79, respectively of the provisional application.
- Pending claims 44-47 are supported by claims 83-86, respectively of the provisional application.
- Pending claims 48 and 49 are supported by claims 89 and 90, respectively of the provisional application.
- Pending claims 50-53 are supported by claims 92-93, respectively of the provisional application.
- Pending claim 54 is supported by claim 98 of the provisional application.
- Pending claims 55-60 are supported by claims 100-105, respectively of the provisional application.
- Pending claim 61 is supported by claim 109 of the provisional application.

- Pending claim 62 is supported by claim 111 of the provisional application.
- Pending claims 63 and 64 are supported by claims 113 and 114, respectively of the provisional application.
- Pending claim 65 is supported by claim 117 of the provisional application.
- Pending claim 66 is supported by claim 124 of the provisional application.
- Pending claims 67 and 68 are supported by claims 127 and 128, respectively of the provisional application.
- Pending claim 69 is supported by claim 141 of the provisional application.

In view of the foregoing, pending claims 1-69 are entitled to the priority date of the priority document, Provisional Application 60/433,409. That priority date is December 13, 2002.

IV. Double Patenting

Pending claims 1-5, 9-12, 17-25, 27-36, 40-43, and 48-69 are provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 129 and 131-153 of co-pending application Ser. No. 11/113,857. Unless and until the co-pending application matures into a patent, however, the appropriateness of such a rejection cannot be ascertained. Applicant will consider filing a terminal disclaimer to obviate this rejection when the application is otherwise in condition for allowance.

V. Claim Rejections Under 35 U.S.C. §112, Second Paragraph

Reconsideration is requested of the rejection of claims 23, 26, 31, 54, 57, and 63 under 35 U.S.C. §112, second paragraph.

Claims 26, 31, 57, and 63 have been amended to clarify the claimed invention and more fully comply with the definiteness requirement of 35 U.S.C. §112, second paragraph.

Applicants respectfully request reconsideration of the rejection of claims 23 and 54 as indefinite for allowing the "pesticide" recited therein to comprise a "herbicide safener." Applicants submit that claims 23 and 54 correspond to the subject matter they regard as their invention.

A rejection based on the failure of applicants to claim the subject matter they regard as their invention is appropriate only where applicants have stated, somewhere other than in the application as filed, that the invention is something different from what is defined by the claims. In other words, the invention set forth in the claims must be presumed, in the absence of evidence to the contrary, to be that which applicants regard as their invention. MPEP § 2172(I). The Office has not referenced any statement of applicants that indicates that the invention does not correspond to the subject matter of claims 23 and 54.

Applicants are entitled to be their own lexicographers and may use terms in a manner contrary to or inconsistent with one or more of their ordinary meanings if the written description clearly redefines the terms. MPEP § 2173.05(a)(III). Applicants submit that the safener may be the pesticide itself. Applicants utilize a broader definition of "pesticide" than the Office definition of "a chemical preparation for destroying plant, fungal, or animal pests." Specifically, applicants consider a "pesticide" to include "chemicals used as active ingredients of products for control of crop and lawn pests and diseases, animal ectoparasites, and other pests in public health." The term also includes "plant growth regulators, pest

repellants, synergists, herbicide safeners (which reduce the phytotoxicity of herbicides to crop plants) and preservatives, the delivery of which to the target may expose dermal and especially ocular tissue to the pesticide." See p. 26, line 26 to p. 27, line 3.

In view of the fact that the agricultural compounds listed in claims 23 and 54 (namely herbicide, a herbicide safener, and a fungicide) correspond of the teaching of the specification regarding what compounds may be considered as a pesticide, the claims clearly set forth the subject matter applicants regard as their invention.

VI. Claim Objections

Claim 32 has been amended to obviate the claim objection.

VII. Claim Rejections Under 35 U.S.C. §102(e)

Reconsideration is requested of the rejection of claims 1-5, 9-12, 17-23, 27-36, 40-43, 48-54, and 58-69 as being anticipated by Asrar et al. (U.S. 6,992,047).

This Amendment A is being filed with a request to correct the inventorship of the claims of the pending application, such that the inventorship is changed from:

Michael E. Seitz and Ronald J. Brinker as joint inventors
to:

Michael E. Seitz, Ronald J. Brinker, Yiwei Ding and Jawed Asrar as joint inventors.

Moreover, this Amendment A is accompanied by Declarations under 37 C.F.R. §1.132 of each of the four inventors unequivocally establishing that the subject matter the Asrar et al. (U.S. 6,992,047) patent relied on by the Office in rejecting

claims 1-5, 9-12, 17-23, 27-36, 40-43, 48-54, and 58-69 is the applicants' own work.

Since the subject matter relied upon by the Office in rejecting the claims is applicants' own work, the subject matter is not "by another" as required by 35 U.S.C. §102(e). In view thereof, the Asrar et al. (U.S. 6,992,047) patent is not §102(e) prior art, and the rejection of claims 1-5, 9-12, 17-23, 27-36, 40-43, 48-54, and 58-69 as being anticipated by Asrar et al. should be withdrawn.

The application which matured into the Asrar et al. patent was filed on April 3, 2002 and published January 30, 2003 as U.S. Pub. No. 2003/0022791. The disclosure of U.S. Pub. No. 2003/0022791 is the same as the disclosure of Asrar et al., U.S. 6,992,047. For example, referring again to the Declarations of each of the four inventors, the inventors have identified the disclosure spanning Col. 24, line 34 to Col. 27, line 65 of U.S. 6,992,047 as describing the work of Michael Seitz, Ronald Brinker, Yiwei Ding, and Jawed Asrar, which is the inventive entity in the present case. This disclosure corresponds to and is identical to the disclosure spanning paragraphs [0286] to [0306] of U.S. Pub. No. 2003/0022791. Moreover, any portion of the Examples of U.S. Pub. No. 2003/0022791 describing the materials useful for the interfacial polymerization of an isocyanate with one or more polyamines also describes the work of Michael Seitz, Ronald Brinker, Yiwei Ding, and Jawed Asrar, which is the inventive entity in the present case. In view thereof, anything in U.S. Pub. No. 2003/0022791 that may be relied upon by the Office in rejecting the present claims is not "by others" as required by §102(a), but rather is the applicants' own work. Therefore, U.S. Pub. No. 2003/0022791 is not §102(a) prior art.

PCT publication WO 2002/082901 claims priority to U.S. Provisional Application No. 60/283,053, the priority document of Asrar et al., U.S. 6,992,047. WO 2002/082901 published October 24, 2002. The disclosure of WO 2002/082901 is also the same as the disclosure of Asrar et al., U.S. 6,992,047. For example, referring again to the Declarations of each of the four inventors, the inventors have identified the disclosure spanning Col. 24, line 34 to Col. 27, line 65 of U.S. 6,992,047 as describing the work of Michael Seitz, Ronald Brinker, Yiwei Ding, and Jawed Asrar, which is the inventive entity in the present case. This disclosure corresponds to and is identical to the disclosure spanning page 42, line 14 to page 48, line 15 of WO 2002/082901. Moreover, any portion of the Examples of WO 2002/082901 describing the materials useful for the interfacial polymerization of an isocyanate with one or more polyamines also describes the work of Michael Seitz, Ronald Brinker, Yiwei Ding, and Jawed Asrar, which is the inventive entity in the present case. In view thereof, anything in WO 2002/082901 that may be relied upon by the Office in rejecting the present claims is not "by others" as required by §102(a), but rather is applicants' own work. Therefore, WO 2002/082901 is not §102(a) prior art.

VIII. Claim Rejections Under 35 U.S.C. §103(a)

A. Over Asrar et al.

Reconsideration is requested of the rejection of claims 24, 25, 55, and 56 as being obvious over Asrar et al. (U.S. 6,992,047).

Asrar et al. patent is cited as a §102(e) reference. As stated by 35 U.S.C. §103(c)(1):

Subject matter developed by another person, which qualifies as prior art only under one or more of

subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person.

In this case, the present application, Application No. 10/728,654, and Patent No. 6,992,047 to Asrar et al. were, at the time of invention of Application No. 10/728,654, owned by or subject to an obligation of assignment to Monsanto Technology, LLC. In view of the above, Asrar et al. is disqualified as a reference under 35 U.S.C. §103(c)(1), thereby obviating the rejection of claims 24, 25, 55 and 56 as obvious over Asrar et al.

Moreover, for the reasons stated in Part VII. of this amendment, neither U.S. Pub. No. 2003/0022791 nor WO 2002/082901 may be relied upon in a §103(a) rejection since any disclosure which may be cited from either reference is not "by another" as required by §102(a).

Applicant acknowledges that the published PCT application, WO 2002/082901 is *prima facie* §102(a) prior art against the instant application, and therefore potentially available under §103(a) against any subject matter not invented by the inventors herein. The Examiner has not identified any disclosure of the PCT which is considered relevant to the claims other than that referred to above in connection with the rejections under §102(e). If there is additional subject matter of the PCT that the Examiner should consider relevant to any of the claims for purpose of obviousness under §103(a), applicant is prepared to address such issue.

B. Over Seitz et al.

Reconsideration is request of the rejection of claims 1-5, 9-12, 17-36, 40-43, and 48-69 as being obvious over Seitz et al. (U.S. 5,925,595).

(1) Claims 1-5, 9-12, 17-23, and 26-31

Claim 1 is directed to a pesticidal material comprising

a substantially water-immiscible core material, the core material comprising a pesticide and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the shell is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine.

Applicants' inventive pesticidal material which comprises a shell wall formed by a polymerization reaction between a polyisocyanate, a principal amine, and an auxiliary amine surrounding a core material is predicated on the realization that several of the factors that affect the release rate of the pesticide from the core of the material and through the shell wall may be manipulated by employing a principal amine and an auxiliary amine in preparing the shell wall. These factors are described in paragraph [0073] and include: "(1) the solubility of the core in the shellwall, (2) the resistance of the polymer to movement of core material molecules within [the wall] due to the chemical composition of the shellwall, and (3) the interaction between these factors."

Prior to applicants' discovery and disclosure, the manipulation of these factors through the use of a principal amine and an auxiliary amine in preparing the shell wall polymers in order to increase or decrease the molecular

diffusivity of core materials through the shell wall was unknown. Based on the art of record, the first factor, the solubility of the core material in the shell wall was not, prior to applicants' discovery and disclosure, predictable merely by examination of proposed shell wall materials, and it was certainly not known how employing two amines to prepare the shell wall would affect the overall solubility of the core material in the shell wall. Rather, applicants discovered and disclosed that the solubility of the core material in the shell wall may be determined by, for example, calculating the Hildebrand solubility parameter and correlating that parameter to the relative ratios of a principal amine and an auxiliary amine used to prepare the shell wall polymer, as discussed in applicants' specification at paragraphs [0077] to [0081], and in particular, paragraph [0079]. The cited Seitz et al. patent does not discuss the solubility of the core in the shellwall, disclose how it may be manipulated or provide any guidance to the ordinarily skilled person relating to how it may be manipulated particularly through the use of amines, or discuss the Hildebrand solubility parameter and its usefulness for manipulating polymer composition to affect the solubility of core materials in the polymer shell wall.

With regard to the second factor, as stated by applicants at paragraph [0082] of their published application, "that while the core is selected to be soluble in the shell wall, this may not ensure a semi-permeable microcapsule...the second factor above...may have a greater effect on release rates than the ability of the core material to swell the shell wall." As further described by applicants from paragraphs [0082] to [0085] of their published application, the potentially more important aspect of polymer shellwall resistance to movement of core

material molecules within the wall may be manipulated by the choice of and relative ratios of principal amine and auxiliary amine. For example, applicants describe blending amines comprising alkyl or alkyl ether linkages which provide flexible amorphous segments and amines comprising aromatic or cyclic hydrocarbon rings which provide rigid regions to thereby affect freedom of movement of core material within the shellwall. Even if, for the sake of argument, the cited prior art provided some guidance as to how the polymer shell wall composition affects the solubility of core material in the wall itself (which it did not), the cited prior art does not disclose anything regarding the potentially more important aspect of blending different amines to affect polymer shellwall resistance to core material mobility therein. Therefore, in addition to the lack of predictability of choosing shellwall components to affect the solubility of the core material in the shellwall, the cited prior art also lacked the disclosure necessary to predict, a priori, how the resistance of the shellwall may be affected by the components used in preparing the polymers thereof.

Overall, therefore, the ordinarily skilled person with the knowledge of the art prior to applicants' disclosure lacked the ability to predict how the solubility of core material in the shellwall and the resistance of the shellwall to core material mobility therein may be affected through the use of a principal amine and an auxiliary amine in preparing the shellwall polymers, or how either of these factors, or the combination thereof, would affect release rates. Applicants, through their discovery, have provided and disclosed methods providing the predictability that was lacking in the art.

Applicants' contribution, therefore, comprises the discovery that the use of a principal amine and an auxiliary

amine in preparing the shell wall may be used to form a shellwall such that core material diffuses therethrough by a molecular diffusion mechanism. Moreover, applicants discovered that the molecular diffusivity of the shell wall may be manipulated to control the rate of molecular diffusion of core material, to either increase or decrease the rate at which core material diffuses through the wall, through the use of a principal amine and an auxiliary amine. Applicants have further shown how the principal amine and an auxiliary amine affect the solubility of core material in the polymer shellwall and how the principal amine and an auxiliary amine affect the resistance of the polymer shellwall to core material mobility therein.

The disclosure of the Seitz et al. patent is wholly silent regarding molecular diffusivity, core material solubility in the shellwall, shellwall resistance, and how these factors are affected by employing a principal amine and an auxiliary amine in preparing the polymer shellwall. Thus, Seitz et al. would not have provided the ordinarily skilled person with any reason to control the molecular diffusion of core materials through a shellwall by using a principal amine and an auxiliary amine in preparing the shell wall. Rather, Seitz et al. is narrowly directed to a method for producing a polyurea shellwall by employing a blend of a trifunctional adduct of a linear aliphatic isocyanate and an aliphatic linear diisocyanate. The permeability of the shellwall is directly proportional to the relative amounts of the trifunctional adduct of a linear aliphatic isocyanate and the aliphatic linear diisocyanate.

Seitz et al.'s disclosure of amines useful for reacting with the trifunctional adduct of a linear aliphatic isocyanate and the aliphatic linear diisocyanate is limited to a single paragraph spanning Col. 8, lines 1-8. The disclosure of these

amines would not have provided the ordinarily skilled person with any basis whatsoever for preparing shellwall polymers using a principal amine and an auxiliary amine. Seitz et al.'s disclosure does not disclose the importance of the three factors described in applicants' paragraph [0073]. It does not disclose how these three factors may be manipulated through the use of a principal amine and an auxiliary amine to prepare a shellwall polymer. It does not disclose that a principal amine and an auxiliary amine may be used to prepare a shellwall such that core material release therethrough is governed by molecular diffusivity. In short, Seitz et al. did not disclose any theoretical basis whatsoever that would have provided the ordinarily skilled person with a reason to experiment with the shellwall components by including a principal amine and an auxiliary amine.

Applicants respectfully submit that the Office has improperly read their own discovery into the very limited disclosure of Seitz et al. using improper hindsight and thus improperly concluded that the Seitz et al. disclosure provided the ordinarily skilled person with more knowledge than is proper based on Seitz et al.'s mere disclosure of amines. It is important to note that Seitz et al. disclose specific amines mostly because these are necessary components to react with isocyanates to form polyureas. Seitz et al. would not have enabled the preparation of polyureas at all without disclosing at least a few adequately functioning amine species at the top of Col. 8. Therefore, the ordinarily skilled person would not have read Seitz et al.'s amine disclosure as providing any reason to experiment with the number of amines or their relative ratios to prepare the shellwall. Rather, the ordinarily skilled

person would have read Seitz et al.'s amine disclosure as merely a necessary component in the synthesis of polyureas.

It is further notable that Seitz et al. do not use any more than one amine in each and every one of their examples. Moreover, Seitz et al. do not disclose any concentration ranges for their amines that may have caused the ordinarily skilled person to conduct routine experimentation within these ranges.

In short, Seitz et al. provided the ordinarily skilled person with no basis whatsoever to prepare polyureas using more than one amine, and additionally did not discuss any of the factors or properties of the amines that would have provided the ordinarily skilled person with a reason for preparing polyureas from at least two amines. In view thereof, applicants respectfully submit that the disclosure of Seitz et al. would not have rendered claim 1 obvious, and applicants request that the rejection be withdrawn.

Claims 2-5, 9-12, 17-23, and 26-31 depend from claim 1 and are patentable for the same reasons as claim 1 and by virtue of the additional requirements therein.

(2) Claims 24 and 25

Claims 24 and 25 have been amended to incorporate the requirements of their base claim 1. Therefore, claims 24 and 25 each require the shell be "formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine." Since claims 24 and 25 each require the use of a principal amine and an auxiliary amine, claims 24 and 25 are patentable over the cited Seitz et al. reference for substantially the reasons

stated in connection with claim 1. Applicants therefore request that this rejection be withdrawn.

(3) Claims 32-36, 40-43, and 48-54, and 57-69

Claim 32 is directed to an agricultural formulation comprising a dispersion of microcapsules in an aqueous phase, said microcapsules comprising a substantially water-immiscible core material,

the core material comprising a pesticide and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the shell is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine.

Since the formulation of claim 32 contains microcapsules formed by polymerization of a polyisocyanate with a principal amine and an auxiliary amine, claim 32 is patentable over the cited Seitz et al. reference for substantially the reasons stated in connection with claim 1. Applicants therefore request that this rejection be withdrawn.

Claims 33-36, 40-43, and 48-54, and 57-69 depend from claim 32 and are patentable for the same reasons as claim 32 and by virtue of the additional requirements therein.

(4) Claims 55 and 56

Claims 55 and 56 have been amended to incorporate the requirements of their base claim 32. Therefore, claims 24 and 25 each require the shell be "formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine."

Since claims 24 and 25 each require the use of a principal amine and an auxiliary amine, claims 55 and 56 are patentable over the cited Seitz et al. reference for substantially the reasons stated in connection with claim 32. Applicants therefore request that this rejection be withdrawn.

CONCLUSION

In view of the foregoing, applicants respectfully request reconsideration and allowance of the pending claims.

Respectfully submitted,

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